## 26 September 2003

This opinion is written to express my view in favor of retention of the Morse code CW requirement for HF operation for all amateur radio license classes along with retention of the HF CW sub-bands. The present amateur radio written license exams should also be made more difficult.

Morse code CW is very spectrum efficient by utilizing a minimum amount of bandwidth for communication of only about 25 Hertz per transmitter. Other modes of communication, such as single-sideband voice, are far more widebanded and inefficient, using approximately 3.0 kilohertz of bandwidth per transmitter in an already overcrowded HF spectrum. This is a 12,000 percent difference in spectrum usage! With a finite amount of spectrum available, it would be in the best interest of the FCC and the amateur radio service to use the most narrow modulation form for communication in order to preserve spectrum and to allow more users. Morse code CW optimizes HF spectrum usage. With this in mind, the HF CW requirement and the CW sub-bands need to be retained.

The amateur radio written test should be made more difficult without giving away any answers to the multiple choice questions to the general public. Prospective licensees are now memorizing the questions and answers to the tests that the FCC freely distributes, rather than actually learning the necessary technical material. If a person is good at memorizing text, then that person can pass the present license exam without really learning anything. This has the effect of degrading the technical standards of the hobby simply to populate the ham bands. I am in favor of making the written test more difficult and for the FCC to stop giving away the answers to the tests. Amateur radio's technical standards have been degraded enough already.

Therefore, I am submitting this opinion to strongly urge the FCC to retain the Morse code CW requirement for all HF operation along with retention of the HF CW sub-bands. The amateur radio written license exam should also be made more challenging without giving prior knowledge of the exact questions and answers.

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